

OFFICE ERGONOMICS

OBJECTIVES

- **Define ergonomics**
- **Define cumulative trauma disorders (CTD's)**
- **Identify ergonomic risk factors**
- **Review methods for minimizing risk factors in an office environment**
- **Introduce self-evaluation checklist**

ERGONOMICS

- **GOAL:** Fit the Job to the Worker

- Design (Management)
- Adjustment (YOU!)



- **RESULT:**

- Work more Comfortably
- Work more Efficiently
- Work more Safely

"Work Smarter, Not Harder"

ERGONOMICS

What is Ergonomics? er-go-nom-ics \, ûrg-go-'näm-iks

‘**Ergonomics**’ is derived from two Greek words

Ergon meaning *work*

and

Nomos meaning *principles or laws*



Ergonomics = The Science of Work

Ergonomics is not a new science, although the term has become more common lately. The phrase was first coined in 1857.

What is Ergonomics? er-go-nom-ics \, ûrg-go-'näm-iks

Common Definitions

“Ergonomics is essentially fitting the workplace to the worker. The better the fit the higher the level of safety and worker efficiency.”
Fitting the Task to the Human ~ Grandjean 1990

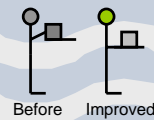
“Ergonomics removes barriers to quality, productivity and human performance by fitting products, tasks, and environments to people.”
ErgoWeb.com

What are the consequences of poor Ergonomics?

- **Why are we hearing about ergonomics now?**
Are there new hazards at work? No!
 - Consequences of poor workplace design were first documented in the 17th century.
- **Have you ever heard of these?**
 - **Historic Occupational Disorders** - house-maid's knee, washer woman's thumb, writer's cramp, data-processing disease, clergyman's knee, nun's bursitis, weaver's bottom, dustman's shoulder, tailor's ankle

Do these historic occupational disorders still exist? Yes!

- They are part of a broad category of injuries and disorders called Musculoskeletal Disorders (MSDs). MSDs are not usually caused by acute trauma, but occur slowly over time due to repetitive injuries to the soft tissues (muscles, tendons, ligaments, joints, cartilage) and nervous system
- MSDs can happen to anyone from office workers and industrial employees to athletes and hobbyists

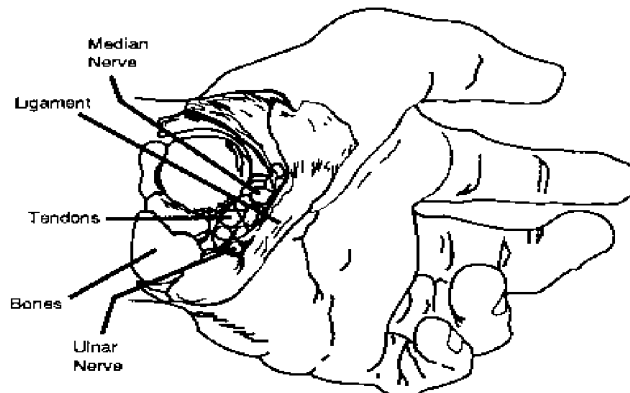


CUMULATIVE TRAUMA DISORDERS (CTD's)

- A type of illness which relates to the **cumulative effect** of micro-traumas that result from repetitive or static work, forceful exertions or awkward postures.
- Examples:
 - Tendinitis, Tenosynovitis
 - Carpal Tunnel Syndrome
 - Shoulder, Neck, Back and Leg Discomforts



CARPAL TUNNEL SYNDROME



Median nerve is compressed as it passes through narrow tunnel of bone and ligament at wrist

FREQUENT SYMPTOMS OF CTS

- Tingling and numbness of the hand
- Pain in the hand and possibly up the arm
- Waking up with pain in the middle of the night
- Difficulty holding objects



KEY: Report symptoms early!
They are treatable and reversible!

NON-OCCUPATIONAL RISK FACTORS

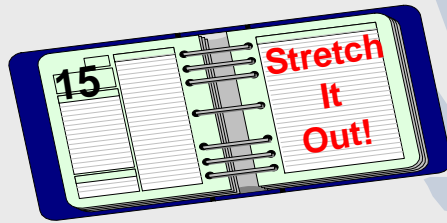
- Hobbies & Athletic Activities:
 - Home Computing, Sewing, Knitting, Golf, Cooking, Video Games, Gardening
- Previous Trauma
- Other Illnesses:
 - Arthritis, Diabetes
- Smoking
- Female Hormone Changes:
 - Pregnancy, Age
 - Oral Contraceptives

CTD RISK FACTORS IN OFFICES

- REPETITION
- POSTURE / POSITION
- SUSTAINED STATIC EXERTIONS
- CONTACT STRESSES
- FORCEFUL EXERTIONS

REPETITION

- Repetitive work without adequate recovery time
- Alternate tasks
- Take frequent mini-breaks



NON-NEUTRAL POSTURES

- Bending wrists up or down
- Bending wrist sideways
- Elbows held away from body
- Closing of elbow
- Neck bending and twisting
- Raising shoulders
- Reaching above shoulders
- Don't maintain natural curves of spine

NON-NEUTRAL POSTURE



NON-NEUTRAL POSTURE

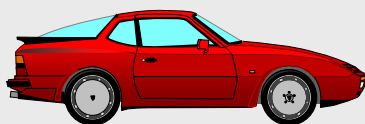


NEUTRAL POSTURE



SUSTAINED STATIC EXERTIONS

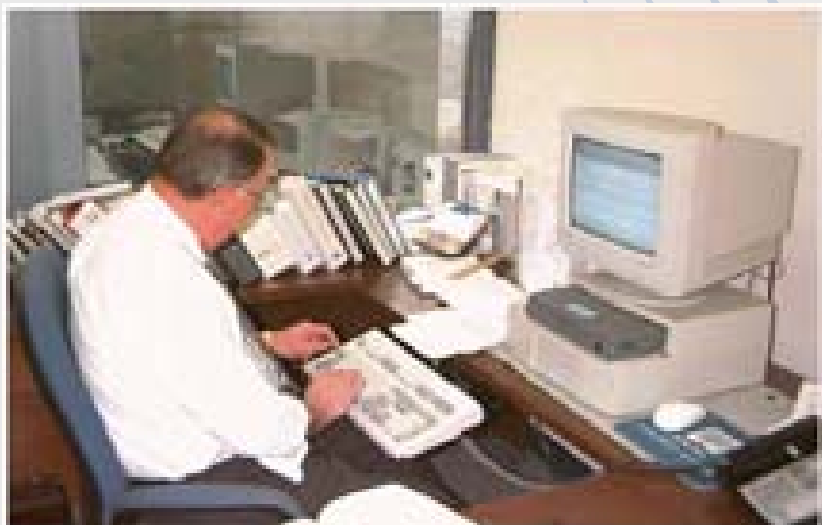
- Prolonged holding of a single posture
- Can be more fatiguing
- Stress factor: working late, skipping breaks, "tightening up"



SUSTAINED STATIC EXERTIONS



SUSTAINED STATIC EXERTIONS



CONTACT STRESSES



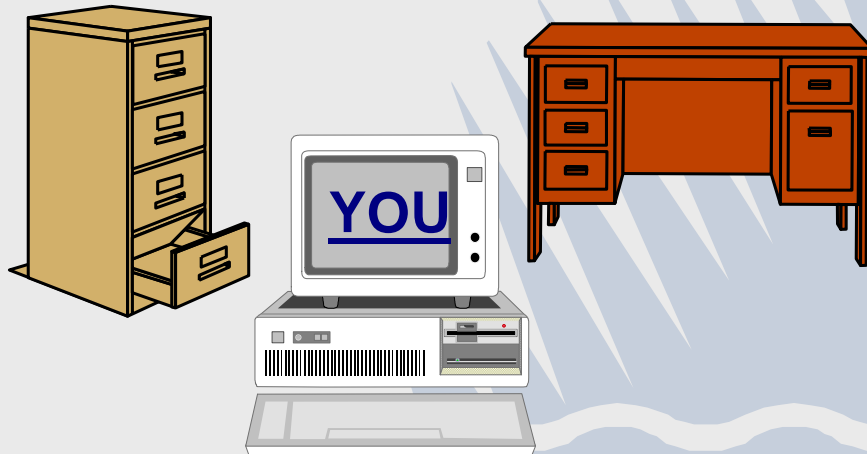
Pressure on the soft tissue caused by contact with sharp edges

FORCEFUL EXERTIONS

- Use of excessive strength during an activity
- Pinch grips require more strength than power grip
- Conditioning



WORKSTATION ADJUSTMENT

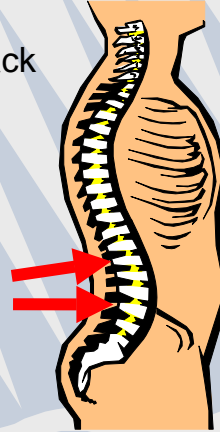


CHAIR ADJUSTMENT



CHAIR LUMBAR SUPPORT

- Support natural curve of lower back
- Adjustability is beneficial
- May be supplemented by detachable cushion



FOOT REST



Recommended when chair is adjusted to a comfortable position in relation to other workstation components and feet do not reach floor

KEYBOARD PLACEMENT

- **Height:**
Adjust to allow operator's upper and lower arms to be at about a 90 degree angle.
- **Angle:**
Should be angled as needed to place wrists in a neutral position. Negative tilt front-to-back is considered good.
- **Position:**
Directly in front of the operator (generally centered between G-H keys).

KEYBOARD PLACEMENT



THE FLOATING ARMS KEYBOARD

An alternative design intervention: The Floating Arms Keyboard

- A chair-mounted split keyboard.
- Built-in trackball in right or left side.



SCREEN POSITIONING

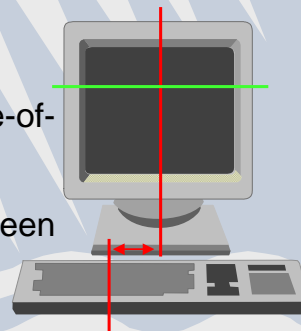
Directly in front of you, if primary viewing object

Distance from eye to screen should be adjustable from about 18" to 30"

Top of monitor at eye level

20 to 30 degrees below Horizontal line-of-sight

Screen should tilt to help eliminate screen reflections

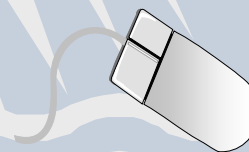


SCREEN POSITIONING



MOUSE PLACEMENT

- Reduce reaching by placing mouse near the keyboard
- Best position is usually at elbow height, keyboard height, or slightly above keyboard height
- Overall goal is to use mouse with a straight or nearly straight wrist



MOUSE PLACEMENT



MOUSE PLACEMENT



WRIST RESTS



WRIST REST FEATURES

- **CAUTION:** Fixed position dependency on wrist rests can lead to deviation of the wrists
- **Size of wrist rest**
 - Width: About 3 inches is ideal
 - Height: Same as front of keyboard, or higher to achieve the beneficial effect of a slightly negative tilt keyboard
- **Material**
 - Resilient
 - Minimal friction

WRIST RESTS



The wrist should receive support from the wrist rest, but not so much that a fixed hand position results. The hands should be mobile along the length of the wrist rest.

DOCUMENT PLACEMENT

- Minimize neck twisting by bringing document close to monitor
- Reduce focus-refocus eyestrain by positioning the document at about the same distance as the monitor screen
- Eyestrain leads to headaches, general body fatigue and muscle tension



DOCUMENT PLACEMENT



DOCUMENT PLACEMENT



OPTIONAL DOCUMENT PLACEMENT



For continual data entry from a document, consider placing document directly in front, or 50/50 monitor /document split

TELEPHONE



TELEPHONE



High percentage telephone use, consider headset

LIGHT SOURCES



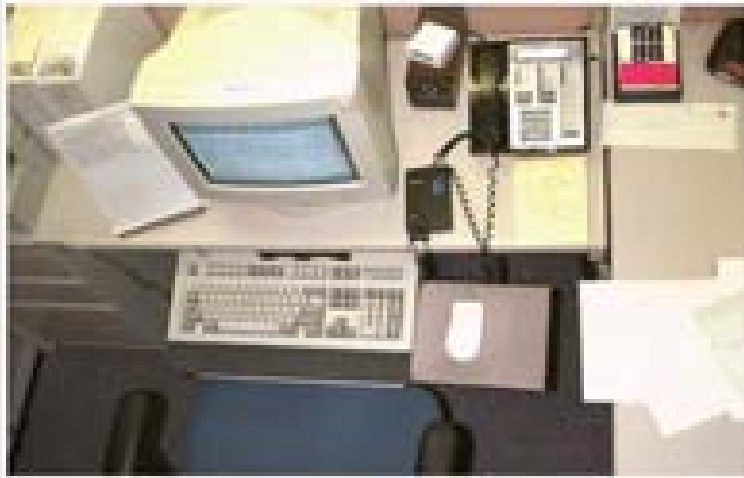
WORK ARRANGEMENT



WORK ARRANGEMENT



WORK ARRANGEMENT



Locate most used equipment and references closest to you

GOOD PRACTICES

- Review daily duties and alternate individual tasks when possible
- Review work habits and minimize risk factors
- Get out of your chair when possible, (e.g. retrieving items from upper shelves)
- Report equipment in need of repair
- Take breaks
- **STRETCH!**



SELF-EVALUATION CHECKLIST

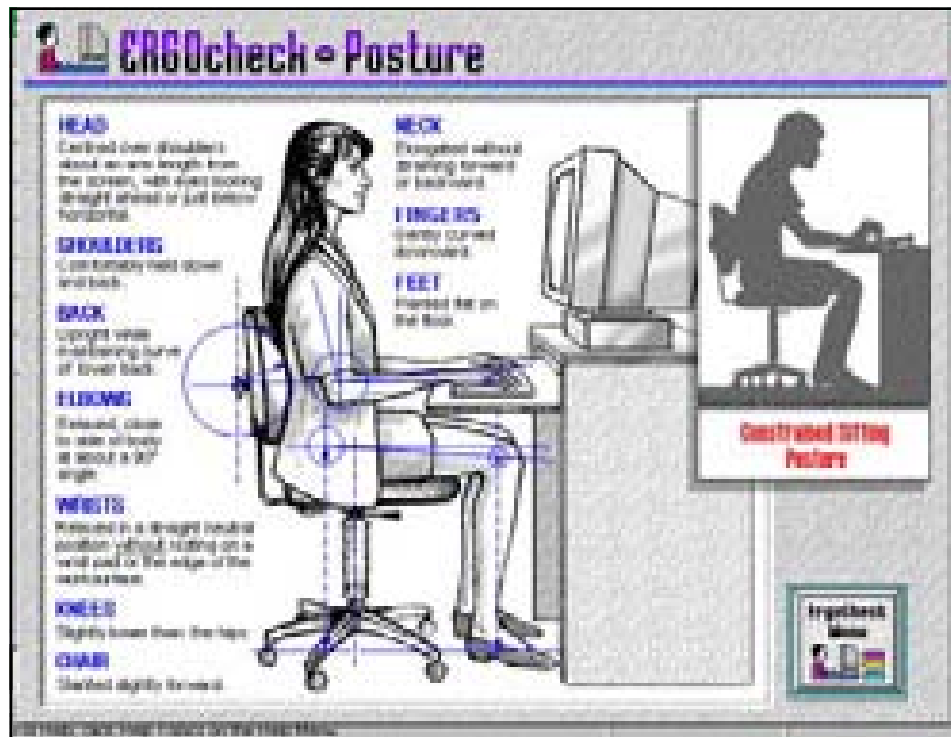
- Work with partner
- Remember risk factors
- Train others

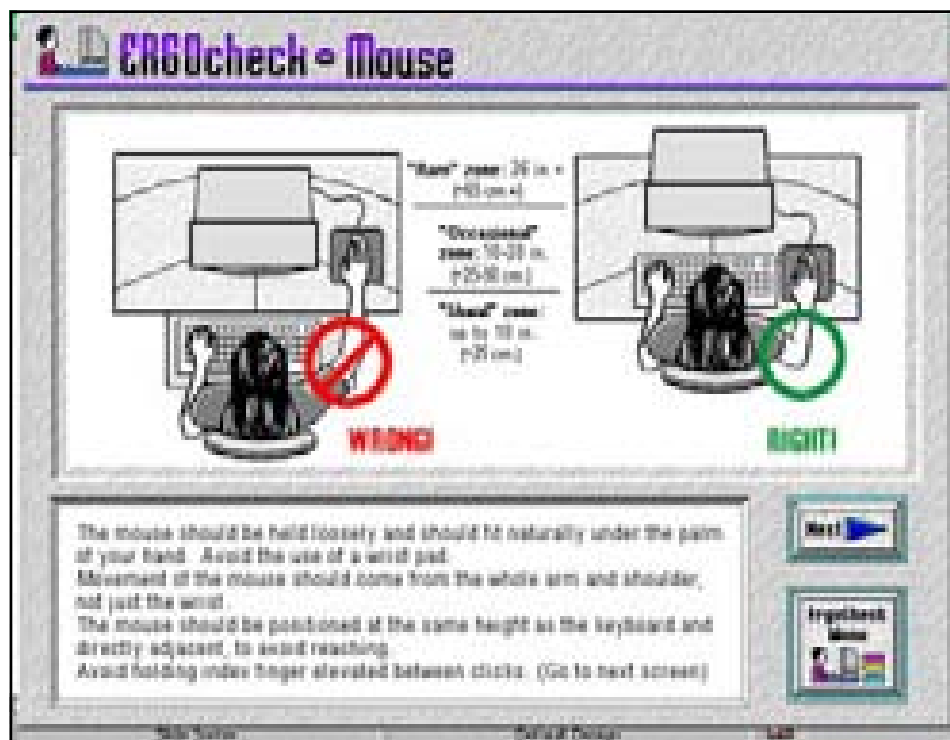
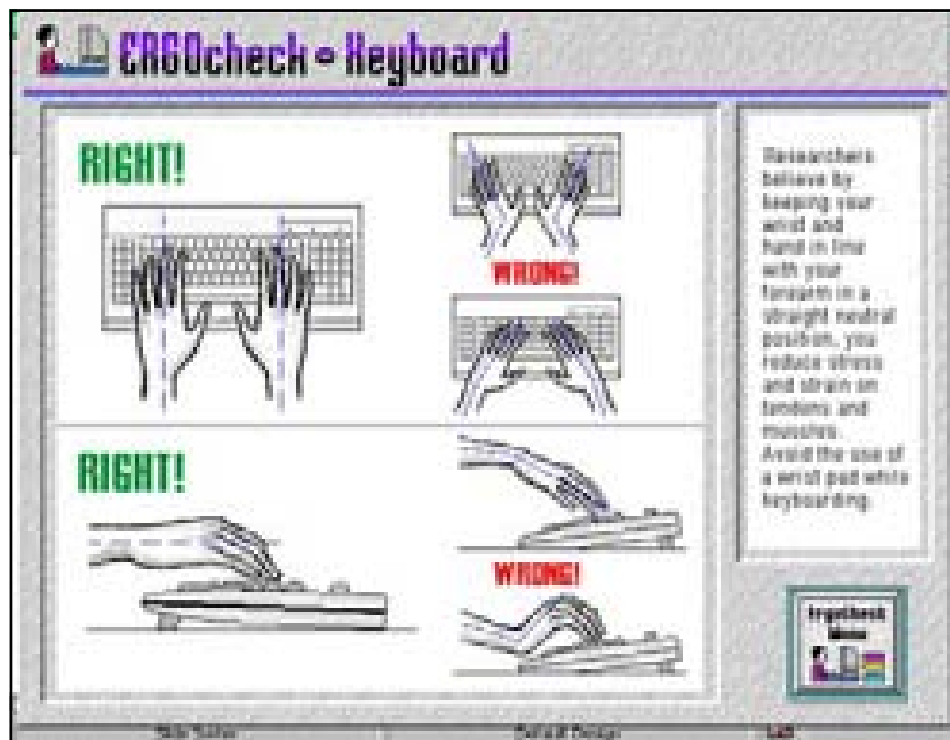


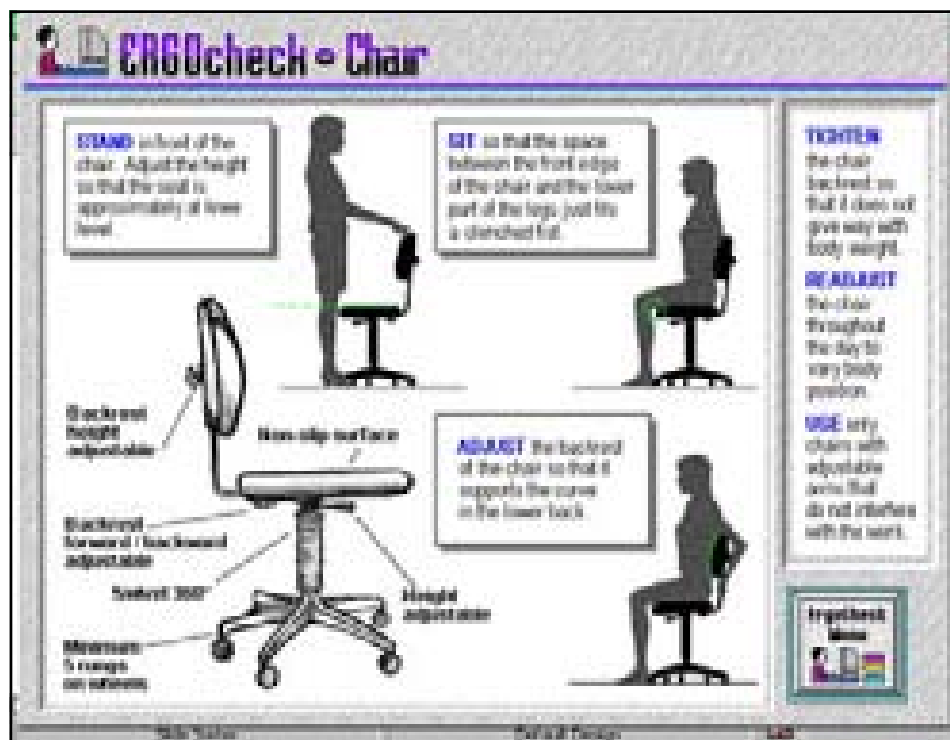
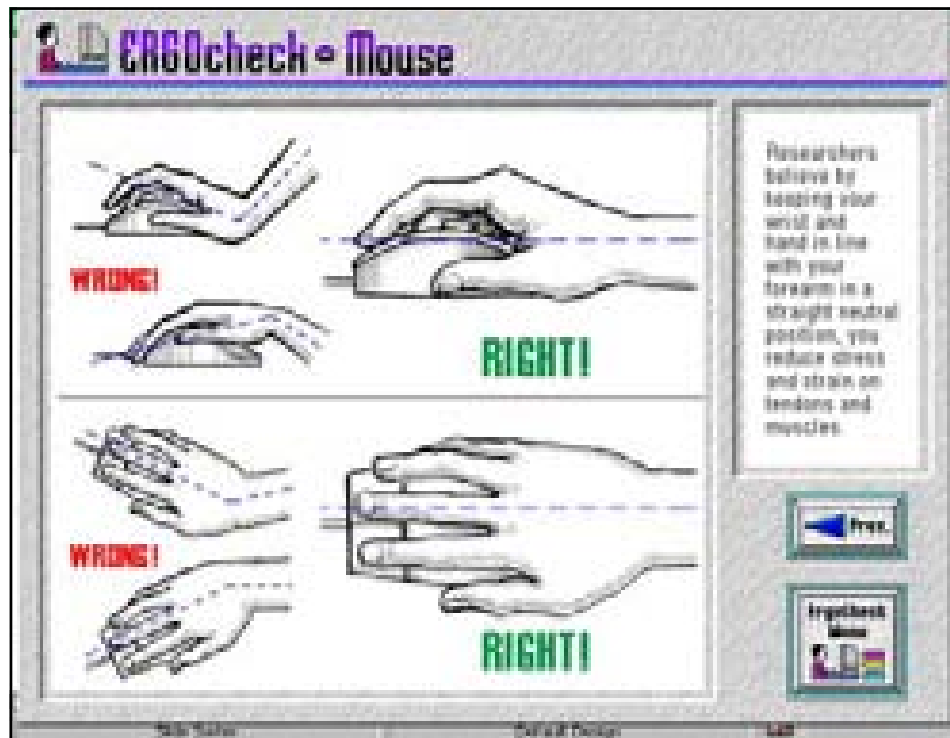
RISK FACTORS REVIEW

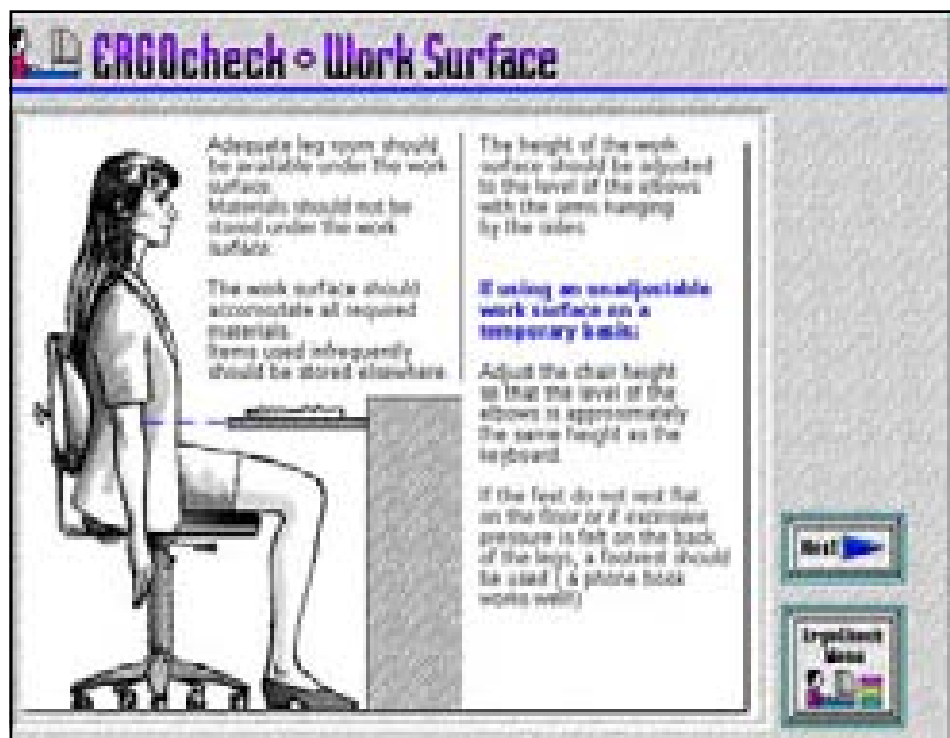
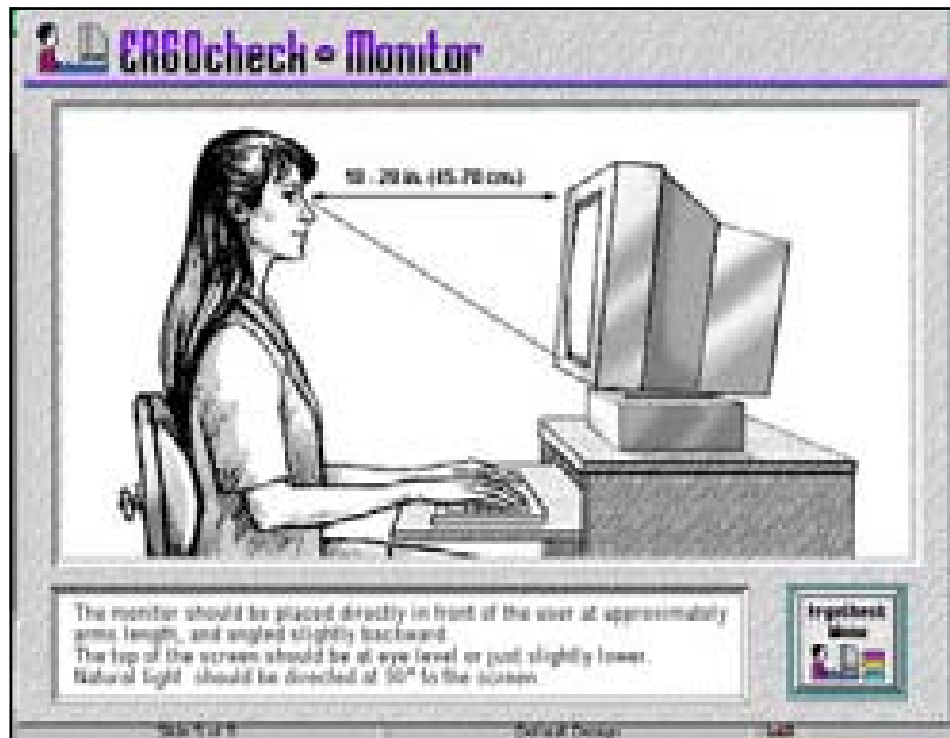
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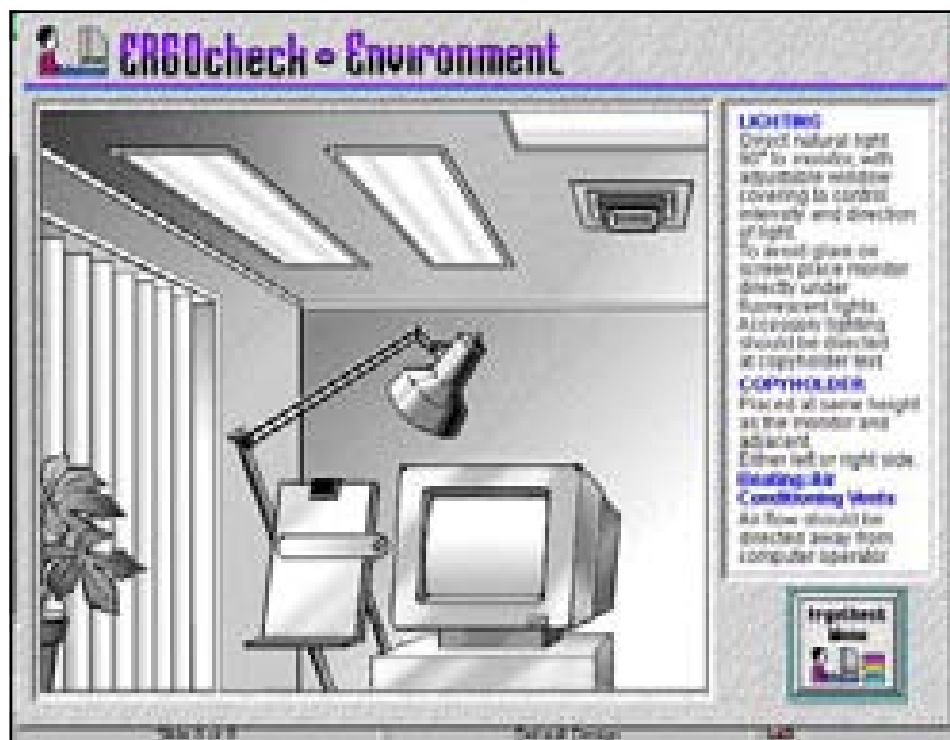
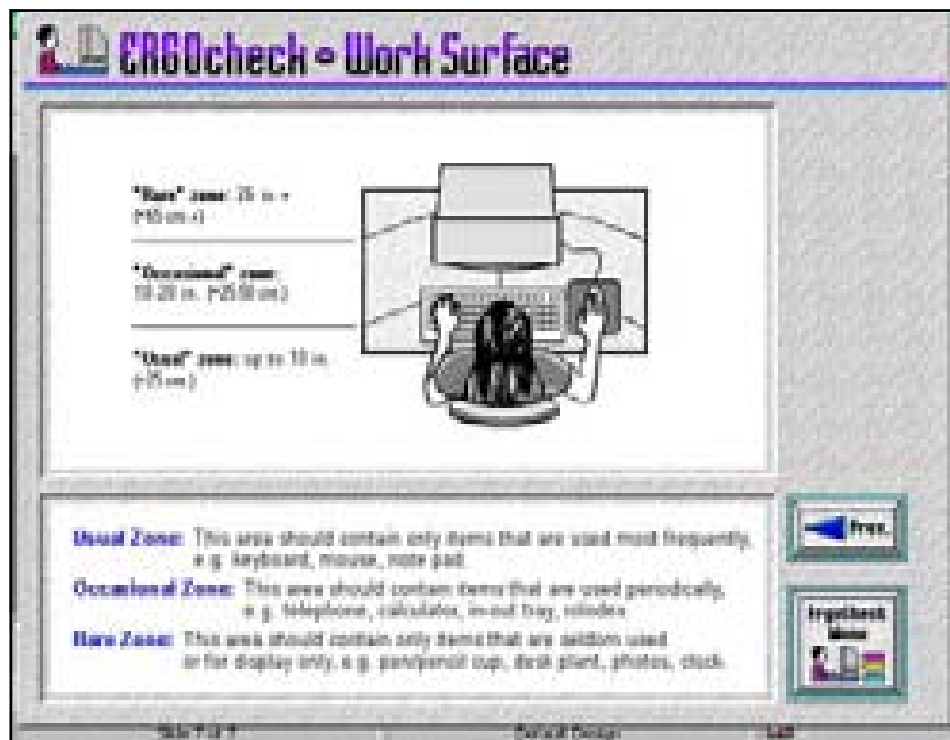
PERFORMING A ERGO CHECK UP











QUESTIONS

